RCNP, OSAKA UNIVERSITY
NUCLEAR PHYSICS
THEORY SEMINAR

Title: STUDY OF BORROMEAN FESHBACH RESONANCE IN 11 Li

Speaker: Takuma MATSUMOTO
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Date and Time: Aug 21st (Tues) in 2018 13:30-

Place: Lecture room 1 on the 6th floor of RCNP main building

Abstract:
Elucidation of resonances is one of the most important subjects in physics. In nuclear physics, various types of resonances such as single-particle resonance, gas-like alpha cluster states, and giant resonances have been discovered. Nowadays resonances for nuclei near and even beyond the neutron dripline have attracted the attention of both experimental and theoretical studies.

Two-neutron halo nuclei near the neutron dripline such as 6He, 11Li, 14Be, and 22C consist of a core nucleus and two loosely bound neutrons, and have a Borromean structure in which there is no bound subsystems. Except for 6He, experimental information on resonances of such Borromean nuclei is very scarce. Existence of a resonance of 11Li, the firstly discovered Borromean nucleus, is a longstanding open question in particular.

In this study, we investigated a resonance state of 11Li through the analysis of 11Li(p, p') reaction at 6 MeV/nucleon with the continuum-discretized coupled-channels method, in which 11Li is described as a 9Li+n+n three-body model. In the present analysis, we found a dipole resonance of 11Li that can be interpreted as a bound state in the 10Li+n system. We refer to this resonance as a Borromean Feshbach resonance. Properties of the Borromean Feshbach resonance will be discussed.

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